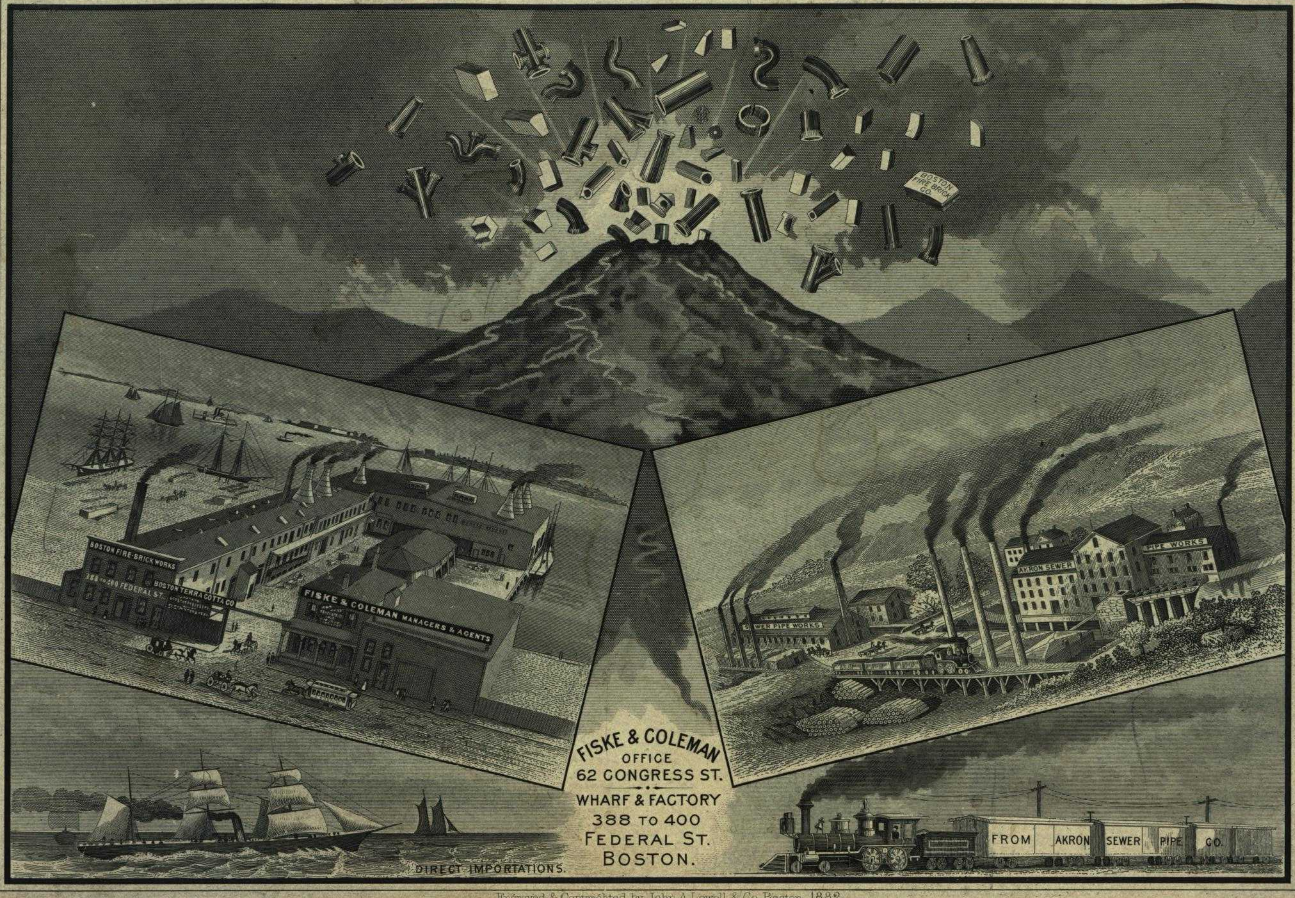

FISKE & COLEMAN
OFFICE
62 CONGRESS ST.
WHARF & FACTORY
388 TO 400
FEDERAL ST.
BOSTON.

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FISKE & COLEMAN,

Managers and Agents of

Boston Fire Brick Works,

Established 1848,

AND

BOSTON TERRA COTTA CO.

Incorporated 1880.

New England Selling Agents

AKRON SEWER PIPE CO.

Celebrated Standard AKRON Salt Glazed SEWER and DRAIN PIPE.

United States Agents for

Messrs. JOSEPH CLIFF & SON'S

Patent Machine-Made Clay Gas Retorts.

Works, WORTLEY, ENGLAND.

Wharf, Factory and Warehouse,

Nos. 388 to 400 FEDERAL STREET,

Pipe Yard,

At B. & A. R.R. TRACKS, HUNTINGTON AVE.

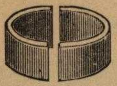
Rear of Mass. Charitable Mechanics Association Building.

Down Town Office,

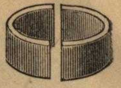
62 Congress, corner Water Street,

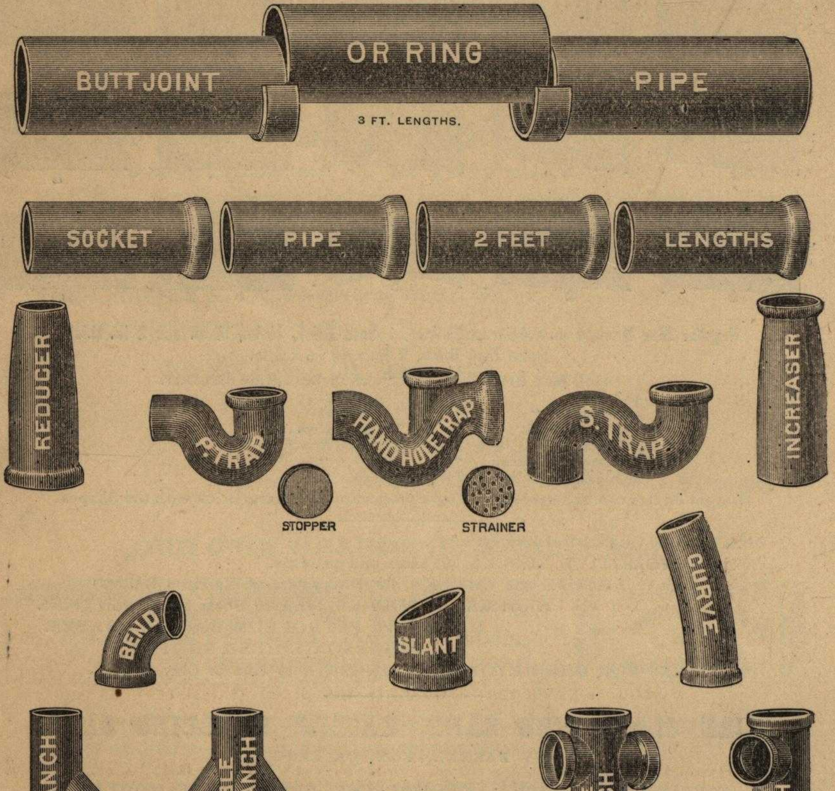
BOSTON, MASS.

STANDARD AKRON SALT GLAZED SEWER PIPE.



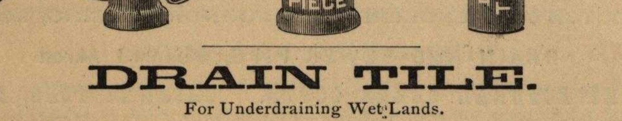
Sizes, — 2 in. to 24 in. inclusive.





DRAIN TILE.

For Underdraining Wet Lands.



☞ **Send for CARD LIST of Net Prices.** ☜

STANDARD AKRON SALT-GLAZED PIPE.

PRICE LIST.

Calibre.	Price per Foot.	Bends and Curves each.	Branches. 2 ft. each.		TRAPS.	Wt. of pipe per ft.	Calibre.	Area.
2 in.	.13	.40	.61	For 3 ft. branches add price of 1 ft. Straight Pipe.	1.00	7 lbs.	2 in.	3.141
3 "	.16	.50	.77		1.50	8 "	3 "	7.068
4 "	.20	.65	.95		2.00	10 "	4 "	12.566
5 "	.25	.85	1.15		2.50	12 "	5 "	19.635
6 "	.30	1.15	1.35		3.50	17 "	6 "	28.274
8 "	.45	2.00	1.90		6.00	24 "	8 "	50.265
9 "	.55	2.50	2.25		7.00	28 "	9 "	63 617
10 "	.70	3.00	2.70		8.00	35 "	10 "	78.540
12 "	.80	3 75	3.50		10.00	46 "	12 "	113.09
15 "	1.25	5.00	4.50		. . .	67 "	15 "	176 71
18 "	1.60	7.50	6.50		. . .	84 "	18 "	254.46
20 "	2.00	8.00	9.50		. . .	99 "	20 "	314.16
24 "	3.25	15.00	12 50		. . .	136 "	24 "	452.39

Reducers' price of Bends at largest opening.

Slants, once and one-half price of Straight Pipe per foot.

Discounts governed by quantity and place of delivery.

Delivered in car-load lots direct from Factory to any R.R. Station in New England, or in lots to suit from our yard in Boston.

As the sole representative in this market of the AKRON SEWER PIPE Co., of Akron, Ohio, all inquiries for this Pipe should be addressed to us, or to the Company at Akron.

For the better accommodation of the public we have established SUB-AGENCIES in all the principal Towns and Cities in New England and are prepared to contract for delivery of large or small quantities in all such places.

THE NECESSITY FOR SEWERS AND DRAINS.

DELETERIOUS EFFECTS FROM USE OF CESSPOOLS, PRIVY VAULTS, INEFFICIENT, POORLY CONSTRUCTED SEWERS.

THE subject of good and efficient sewerage as a sanitary measure, is now attracting the attention of city authorities all over the world, and to defective sewers can be directly traced the source of the terrible epidemics which have scourged the thickly-settled districts of otherwise healthy localities.

The use of cess-pools and privy vaults in thickly-settled cities, towns and villages, has caused more deaths than consumption, small-pox and scarlet fever; and yet to defective sewerage physicians now trace the origin, in many cases, of these two last-named terrible diseases, to which may be added all the various types of typhoid and enteric fevers wholly attributable to the impure air and water adulteration generated by defective sewerage. Cases of the sickness and death of whole families have been traced to wells into which the sewerage from cess-pools and privy vaults had filtered, blackening the stones with the filth thus transmitted to the table and kitchen for family consumption.

Even villages of twenty or twenty-five closely-built houses are not free from this danger, as the soil, impregnated with offals from privy vaults and cess-pools, must contaminate the wells, an analysis of the waters of which would account for hitherto unexplained causes of epidemics.

All sanitarists agree that the only effectual way to prevent the diseases generated by the accumulation of filth, is its immediate removal; and the most practical means of its removal is considered to be a thorough and efficient system of drainage.

KINDS OF SEWERS.

ADVANTAGE OF PIPE SEWERS OVER BRICK SEWERS.

AN effective system of sewerage is an expensive necessity to any city; but the cost of the material going into their construction is small compared with the labor of construction and the inconvenience and danger of opening streets and tearing up pavements while the sewers are being built. It is therefore of *prime importance* that the material used should be of the most durable quality, and pains should always be taken to select the *best* the market affords. City authorities will best subserve the interest of the tax-payers, by avoiding the errors which the light of experience has made known.

Heretofore the material used in the construction of sewers has to a great extent been brick.* It has been demonstrated that they do not effectually remove the filth; that little by little it collects on the bottom and sides of the sewers, until many times they become choked and cannot perform their work until they are cleaned, at great cost, by manual labor; that during the collection of this filth in the sewer, it generates gases as poisonous as the fabulous Upas Tree; that the gases act upon the mortar between the bricks, and even the brick, causing disintegration, thereby opening a way for their escape into the atmosphere.

It has been practically demonstrated that all these difficulties may be overcome by the use of SALT GLAZED VITRIFIED CLAY PIPE. They have a smooth, even surface, and if the size is proportionate to the amount of work they have to perform they are self-cleaning and are impervious to the action of acids and gases. Col. GEORGE E. WARING, Jr., who has had much experience in sewerage, the author of "The Sanitary Drainage of Houses and Towns," a valuable work from which, by permission, we quote, and which we commend to the authorities wherever sewerage is contemplated, says:—

"The more important considerations affecting the question of town sewerage are well stated in the 'general conclusions' of the English Board of Health, after a thorough investigation of the whole subject of sewerage as follows: * * * * *

"That the general use of large brick sewers has resulted from ignorance or neglect; such sewers being wasteful in construction and repair, and costly through inefficient efforts to keep them free from deposits.

“That brick and stone house drains are false in principle, and wasteful in cleansing, construction and repair.

“That house drains and sewers properly constructed of vitrified pipe, detain and accumulate no deposits, emit no offensive smells, and require no additional supplies of water to keep them clear.

“The pipe sewer has been so long in successful use, that there is no further question of its value.” * * * *

A chief argument in favor of the use of pipe rather than brick sewers, lies in their greater essential cleanliness. Brick sewers are always offensive, even though small, because their porous walls are more or less permeated by the filth of their contents.”

Not only are brick sewers objectionable because of the defects already mentioned: *they are expensive after they are built*, on account of having to be cleaned at frequent intervals.

CAPACITY OF PIPE.

Size of Pipe.	GALLONS PER MINUTE							
	1½ inch fall per 100 feet.	3 inch fall per 100 feet.	6 inch fall per 100 feet.	9 inch fall per 100 feet.	12 inch fall per 100 feet.	18 inch fall per 100 feet.	2 feet fall per 100 feet.	3 feet fall per 100 feet.
3 inch.	21	30	42	52	60	74	85	104
4 “	36	52	76	92	108	132	148	184
6 “	84	120	169	206	240	294	338	414
9 “	232	330	470	570	660	810	930	1140
12 “	470	680	960	1160	1360	1670	1920	2350
15 “	830	1180	1680	2040	2370	2920	3340	4100
18 “	1300	1850	2630	3200	3740	4600	5270	6470
20 “	1760	2450	3450	4180	4860	5980	6850	8410

The maximum rainfall as shown by statistics is about 1 inch per hour (except during very heavy storms), equal to 22,633 gallons per hour for each acre, or 377 gallons per minute per acre.

Owing to various obstructions not more than 50 to 75 per cent. of the rainfall will reach the drain within the same hour, and allowance should be made for this fact in determining size of pipe required.

DIFFERENT KINDS OF PIPE.

STANDARD AKRON SALT GLAZED PIPE THE BEST.

IT has been shown on the preceding pages that pipe sewers are far preferable to brick sewers. The question that now arises is, *what kind of pipe is best?* There are three kinds of pipe offered in the market; viz., "*Salt Glazed Vitrified Clay Pipe*," "Slip Glazed Clay Pipe," and "Cement Pipe." The name of the latter indicates what it is, and we will not trespass upon the time of our readers by entering upon a lengthy discussion of its merits or demerits. Let it suffice to say that it has failed whenever it has been put to severe tests, and has been condemned by all prominent sewerage engineers, evidence of which will be found in the testimonials appended.

The "Slip" Glazed Clay Pipe is made of what is known as "fire" (such as fire brick) clay, which retains its porosity when subjected to the most intense heat. It is glazed with another kind of clay, known as "slip," which, when subjected to heat, melts, creating a very thin glazing, which being *a foreign substance to the body of the pipe*, is liable to wear or scale off.

Salt Glazed Clay Pipe is made of a clay which, when subjected to an intense heat, becomes vitreous or glass-like, and is glazed by the vapors of salt, the salt being thrown in the fire, thereby creating a vapor which unites chemically with the clay, and forms a glazing which will not scale or wear off, and is impervious to the action of acids, gases, steam, or any other known substance. It unites with the clay in such a manner as to form *part of the body of the pipe*, and is therefore indestructible.

Salt glazed pipe can only be made from clay that will vitrify; that is, when subjected to an intense heat will come to a hard compact body, not porous; and it should be borne in mind that "slip glazing" is only resorted to when the clays are of such a nature that they will not vitrify. * * * * * *

"*The material of the pipe should be a hard, vitreous substance not porous, since this would lead to the absorption of the impure contents of the drain;* would have less actual strength to resist pressure; would be more affected by the frost or by the formation of crystals in connection with certain chemical combinations, or would be more susceptible to the chemical action of the constituents of the sewerage." * *

"Much experience with cement sewer pipe seems to demonstrate that they are not sufficiently uniform in quality, nor sufficiently strong and durable to be used with confidence in any important work, whether public or private. SEWER PIPES SHOULD BE SALT GLAZED, as this requires them to be subjected to a much more intense heat than is needed for 'slip' glazing, and thus secures a harder material."

THE AKRON SEWER PIPE CO.

with an experience of nearly a third of a century in its management, and operating *the most extensive works in America*, if not in the world, has established a reputation for making the best sewer pipe offered in the market, known as "*Standard Akron Salt Glazed Sewer Pipe*," which has created a demand for it at all points where the best article in that line is desired, in evidence of which, diplomas and medals have been awarded by the American Institute of New York and Massachusetts Charitable Mechanic's Association, and three diplomas in succession by the Northern Ohio Fair Association.

At Washington, D. C., the comparison was instituted between the best Scotch and the Standard Akron Salt Glazed Sewer Pipe. The Scotch pipe was twelve inch calibre, three feet long, shell one and one-sixteenth inches thick. Akron pipe twelve inch calibre, two feet long, and one inch thick. The test was made by WM. H. CHASE, Superintendent of Sewers, under instructions from the Board of Public Works of Washington. A plank seven feet long, three inches thick and eight inches wide, was fastened at one end, two feet from which the pipe was placed bedded in the sand; at the other end (five feet from the pipe) weight was suspended.

The Scotch pipe crushed into small pieces under a suspended weight of 600 pounds. The Akron pipe split like barrel staves under a suspended weight of 700 pounds. At Chicago, the test was on several specimens of vitrified clay pipe from different manufacturers, and was by hydrostatic internal pressure; the Akron pipe was the strongest exhibited. This test was made by W. H. CLARKE, Assistant City Engineer of Chicago, in 1869.

We are now prepared to enter into contract for immediate supply to Cities, Towns, Dealers, Builders, etc., in *large* or *small* quantities of the best Sewer Pipe ever offered to the public. As to the quality of the Pipe, the appended testimonials speak for themselves.

TESTIMONIALS.

Messrs. Fiske & Coleman, Boston.

Gentlemen:—In my opinion a good sewer pipe should be of clay of close texture, and tough as well as strong, salt-glazed, smooth and true in form, both as to section and straightness, and without brittleness on the outer surface. I think I have never seen, on the whole, pipes better answering all the requirements of a good sewer pipe than those made by the Akron Sewer Pipe Company.

Yours very truly,
J. HERBERT SHEDD.

Highway Department,
Office of Supt. of Streets,
New Bedford, Mass., Jan. 2, 1878.

Messrs. Fiske & Coleman:

Gentlemen,—I take great pleasure in saying that I have used a large quantity of the "Akron Pipe" in the city of New Bedford the past year, and I think it is the best sewer pipe I have ever seen; and I also take great pleasure in saying that your transactions with me have been satisfactory and honorable in every respect.

Yours most respectfully,
[Signed] SETH C. CALDWELL,
Supt. of Streets.

Lewiston, Me., March 7th, 1878.

Messrs. Fiske & Coleman:

Gentlemen,—In my duties as Superintendent of Street Drains, and Sewers, I have during the three years past had occasion to overhaul many defective drains and sewers, have removed upwards of 1000 feet of defective cement pipe, and when I have not substituted brick I have used the clay, the past year using the "Akron" exclusively. We are satisfied from tests already made that the Akron Pipe is superior to any in the market for all purposes where pipe drains are required.

Besides the city work here, private parties have used largely of this Pipe, and it has the preference in this market ON ITS MERITS ALONE.

Respectfully yours,
JOHN READ, Supt. of Streets, &c.

City Engineer's Office, City Hall,
Somerville, Mass., Jan. 28, 1878.

Messrs. Fiske & Coleman:

Dear Sirs,—The Akron Pipe purchased of you in 1877 gave good satisfaction. It was quite smooth and true in shape; in this respect it excels the other vitrified pipes that we have used.

Yours,
GEO. A. KIMBALL,
City Engineer.

February 12, 1878.

Messrs. Fiske & Coleman:

Gentlemen,—We have used the "Akron Pipe" for the town of Barnstable, and do not hesitate to say that it has given us perfect satisfaction.

ANDREW LOVELL, } *Selectmen of*
L. L. GOODSPEED, } *Barnstable.*

Stoughton, Mass., Jan. 20, 1878.

Messrs. Fiske & Coleman:

Gents,—The Town of Stoughton have used one thousand feet of the Akron Sewer Pipe the past season, and find it appeared much the best pipe ever used.

GEORGE TALBOT,
Ch. of Selectmen, Stoughton, Mass.

City of Concord,
Mayor's Office, Concord, N.H.,
September 8, 1878.

Akron Sewer Pipe Co.,
D. L. King, Secretary:

Dear Sir,—As to the quality of Sewer Pipe we have had of you I can only say, that it has given us perfect satisfaction. Your transactions with us have also been entirely satisfactory and harmonious, and you are at liberty to refer to me, and I know that Mr Kimball, our former Mayor, would be glad to speak a good word for you, from what he has told me.

Yours truly,
GEO. A. PILLSBURY,
Mayor of Concord.

City of Lowell,
Mayor's Office, October 5, 1876.

D. L. King, Esq.:

Dear Sir,—I take great pleasure in saying that the city of Lowell has used the "Akron Pipe" about three years, and as far as I am informed, it gives *unqualified* satisfaction; in fact it is being used here by our people to the exclusion (substantially) of all other kinds.

Very truly yours,
CHAS. A. STOTT, Mayor.

City of Manchester, New Hampshire,
Office of the Mayor, Sept. 8, 1876.

D. L. King, Esq., Secretary, Akron, Ohio:

Dear Sir,—The city of Manchester has, during the past season used a large lot of pipe from your manufactory, and we are entirely satisfied with it thus far, and should recommend it to parties wanting sewer or drain pipe for any purpose You are at liberty to refer to me if you have occasion to do so. Very respectfully,

IRA CROSS.

September 12, 1876.

D. L. King, Esq.:

This is to certify that I have laid a large amount of Akron Pipe this season, running from 8 to 24 inches in size, and consider it the best ever used in this city in the construction of sewers and drains, and highly recommend it to any who may be in want of sewer or drain pipe.

WARREN HARVEY,
Sup't of Streets and of Sewers and Drains.
Manchester, N. H.

Experience and Opinions of E. S Chesbrough, City Engineer of Chicago, Chief among Civil Engineers.

Chicago, July 16. 1872.

To the Board of Public Works:

Gentlemen,—The Secretary's letter of the 13th, informing me that you desire a report from me of "the value," in my opinion, "of cement pipes for sewerage purposes" has been received. I take it for granted that the Board meant cement pipe as compared with hard-burnt or vitrified clay, as no other kinds are used to any considerable extent in this country, though wood, asphalt and iron are in particular localities used for special reasons.

I have given personal attention to this subject for about 20 years, and have both conversed and corresponded with other engineers relative to it.

Either kind of pipe requires skill and faithfulness on the part of those in charge of the laying of the sewers. The case, however, of judging of the suitableness of a burnt pipe for a sewer is much greater than in the case of a cement pipe. In fact it is very difficult, if not impossible, to be certain with regard to the cement pipe, while it is not so with regard to hard-burnt clay.

Cement pipes have been slowly disintegrated by certain gases and acids emptied into them. Some very striking incidents of this kind occurred in San Francisco, where urine from privies was discharged into the cement pipes. Nothing of this kind has ever occurred, so far as I can learn, with well-burnt pipes.

My opinion is, that hard-burnt or vitrified clay pipe should be preferred for sewerage purposes to cement pipe, because of the much greater certainty of getting a good article of the former than of the latter; and in this respect I have the concurrence of several distinguished members of my profession, who have come to their conclusions on the subject after years of observation and experience.

Respectfully submitted,
[Signed] E. S. CHESBROUGH,
City Engineer, Chicago.

We have a mass of testimony in addition to the foregoing, showing the inferiority of the Cement Pipe, and the great superiority of the Standard Akron Salt Glazed Sewer Pipe, and any further information will gladly be furnished, for which please address,

FISKE & COLEMAN,

New England Agents,

62 Congress St., BOSTON.

To Gas Companies.

WE would respectfully announce that we have arranged with Messrs. Joseph Cliff & Sons, of Wortley, England, for the exclusive United States agency of their *Patent Machine-made Clay Gas Retorts*, for which the following merits are claimed:

1st. They are much truer in form, therefore set with less trouble and expense.

2d. Perfectly uniform in composition and regular in thickness.

3d. No joints, therefore no weak places.

4th. These Retorts are stationary, neither expanding nor contracting, a most valuable property, as the joints are thus kept close and the front wall and ascension pipes are not pushed out of their true position.

5th. More gas is sent forward to the gasholder from these Retorts than from any others from every ton of coal carbonized. This has been proved in three of the largest works in England.

6th. They will last longer than those made by hand.

Cliff's Patent Machine-Made Retorts.

SPECIAL NOTICE.

OUR Patent Machine-Made Retorts have now been in work close *on 800 days*, in one of the largest works in the Kingdom, and are *yet in good order*, and likely to work yet for a long time.

Surely a *fact* like this should be sufficient to convince all users that these Retorts are the best and cheapest that are made.

Cliff & Sons *make far more Retorts* than any other maker in the Kingdom.

N. B.—Taken out when they had done 1,250 days.

These MACHINE-MADE RETORTS are in use, and giving great satisfaction in some of the largest gas works of the old world, and we would ask your kind attention to the following specimen testimonials:

LONDON GAS LIGHT CO.
WORKS: NINE ELMS,
October 2d, 1876.

MESSRS. J. CLIFF & SONS, Wortley.

Dear Sirs,—I found your Patent Retorts which we had in use last Winter, when let down, in very much better condition than the Stourbridge ones, alongside of them—the joints of the latter were 1 in. to 1½ in. wide, while yours, set in exactly the same way, were quite close. I have lately lighted up some 24 settings of the same, oval and round, which are doing excellent work and promise well.

Yours very truly,
ROBERT MORTON.

Following up the above he writes as under:

NINE ELMS, October 16th, 1876.

Dear Sirs,—After another twelve months' working of your patent Machine-made Retorts, I am able to endorse all I said of them last year, and to add that their tendency to accumulate a deposit of carbon is *much less than that of the hand-made ones:* and that what is deposited is *much more easily removed.* Their immobility in heating and cooling is to me one of their greatest recommendations (we have suffered so much from undue expansion and consequent cracking); this, however, I should presume, arises more from the nature and preparation of the material used than from the fact of their being machine-made.*

I am, yours faithfully,
ROBERT MORTON.

* In our opinion their excellent quality is due to both causes and not one only.—J. C. & S.

From MR. TREWBY, GAS WORKS,
BECKTON, October 3d, 1876.

Dear Sirs,—In reply to your inquiry, I beg to say that your Patent Retorts have given me every satisfaction up to the present time, having had experience of their working for nearly two years.

I have reason to believe that Retorts made on your plan, are more compact than those made by hand.

I remain, yours truly,
E. C. TREWBY.

MESSRS. CLIFF & SONS.

These Retorts continue to work satisfactorily, and are yet in good order as will be seen from the following replies given by Mr. TREWBY, on 25th October, 1877:

QUERIES.	REPLIES.
Shape, Size, and Length of Retorts? . . .	◡ 20 in. x 13 in. 20 feet long.
Number of days actual work?	833 days, and still at work.
What hours charges are worked?	6 and 4 hours.
Weight of each charge?	4.92 cwt. for 20 feet Retort.
Gas made in 24 hours per mouthpiece or per Retort 20 feet long?	5,400 per mouthpiece, or 10,800 per Retort 20 feet long.
Total number of tons of coal carbonized by the Retort which you have had working longest?	774 tons.
What feet of gas per ton of coal is sent to your gasholder?	10,400 cubic feet.
Do you consider that on account of these working so much closer and cracking so little, and being non-contractive, they enable you to land more gas in your holder than the ordinary run of hand-made Retorts?	Cannot say at present, but should think so.
Have they entailed extra trouble in scurfing?	No.
Do you consider them better than any other Retorts?	They are equal to the best make.

We are also in possession of very flattering testimonials from the London and Liverpool Gas Works, which we shall be pleased to show upon application, but are requested not to print. With the very large facilities of Messrs. Cliff & Sons, the use of our Cable Code, and the extensive steamer service between England and the United States, we expect to be able to fill orders, very nearly if not quite as promptly as any factory in America.

We are now ready to contract for delivery of Retorts, ex-ship at any of the principal ports of the United States, or set in the benches complete. FIRE BRICKS, and a special setting of our own, (manufactured by ourselves) furnished if desired; or Bricks and settings complete sent from Messrs. Cliff & Sons, as preferred.

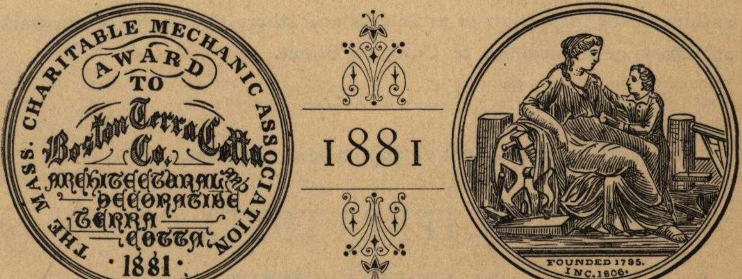
Plans and drawings can be obtained upon application at this office.

Experienced Retort Setters furnished if desired.

We respectfully solicit correspondence. Address,

FISK & COLEMAN, Managers and Agents,
Boston Fire Brick Works,
62 Congress Street,
BOSTON, MASS.

GOLD MEDAL.


THE MASS. CHARITABLE MECHANIC ASSOCIATION
AWARD TO
Boston Terra Cotta Co.
ARCHITECTURAL & DECORATIVE TERRA COTTA
·1881·
1881
FOUNDED 1795.
INC. 1806.

Massachusetts Charitable Mechanic Association

Exhibition.

ARCHITECTURAL TERRA COTTA.

As managers of the Boston Terra Cotta Co., incorporated under the laws of Massachusetts, whose works are located at our wharf, 388 to 400 Federal Street, we are prepared to furnish from special designs, or stock patterns Terra Cotta for ornamental building purposes.

Chimney Tops,
Window Caps,
Moulded Bricks,
Window Sills,
Belt Courses,
Wall Coping,
Ridge Tiles,
Hearth Tiles,
Whole Fronts,
Ornamental Tiles, &c.

and invite the inspection of architects and others to samples of our work at factory, or at our office, 62 Congress Street.

Illustrated catalogue sent on application. Address,

BOSTON TERRA COTTA CO.
394 FEDERAL STREET,
Or 62 CONGRESS STREET,
BOSTON.

24,82
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1,4892

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9928
4964
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24,82 [illegible]
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